Manitoba
Energy and Mines
Mines Branch

Aggregate Report AR85-1

Aggregate Resources in the Rural Municipality of Wallace

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Energy and Mines

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ABSTRACT

The Rural Municipality of Wallace comprises 1106 km² in southwestern Manitoba. It is underlain by Cretaceous shales of the Riding Mountain Formation. Surficial units include corrugated moraine in the central portion of the municipality, a till plain in the southwest and northeast, scattered ice-contact deposits, outwash along southeast-trending meltwater channels, and deltaic and lacustrine silts and sands in the southeast. An inventory of the sand and gravel resources was carried out during the summer of 1984 to determine location, quantity and quality of economic aggregate resources. Field investigations included air photo interpretation, examination of existing pits, backhoe testing and sampling of all granular deposits. Sand and gravel is found primarily in glacial outwash deposits and, to a minor extent, in ice-contact deposits. Varying amounts of deleterious substances such as shale, chert and weathered Precambrian clasts are present in all sand and gravel deposits. Total reserve estimates were calculated at 1 484 365 m³ with 850 250 m³ defined as medium quality. Based on these figures, reserves will be sufficient to supply the sand and gravel requirements for the R.M. of Wallace for the next 18 years. Aggregate from neighbouring municipalities is imported occasionally at the present time.

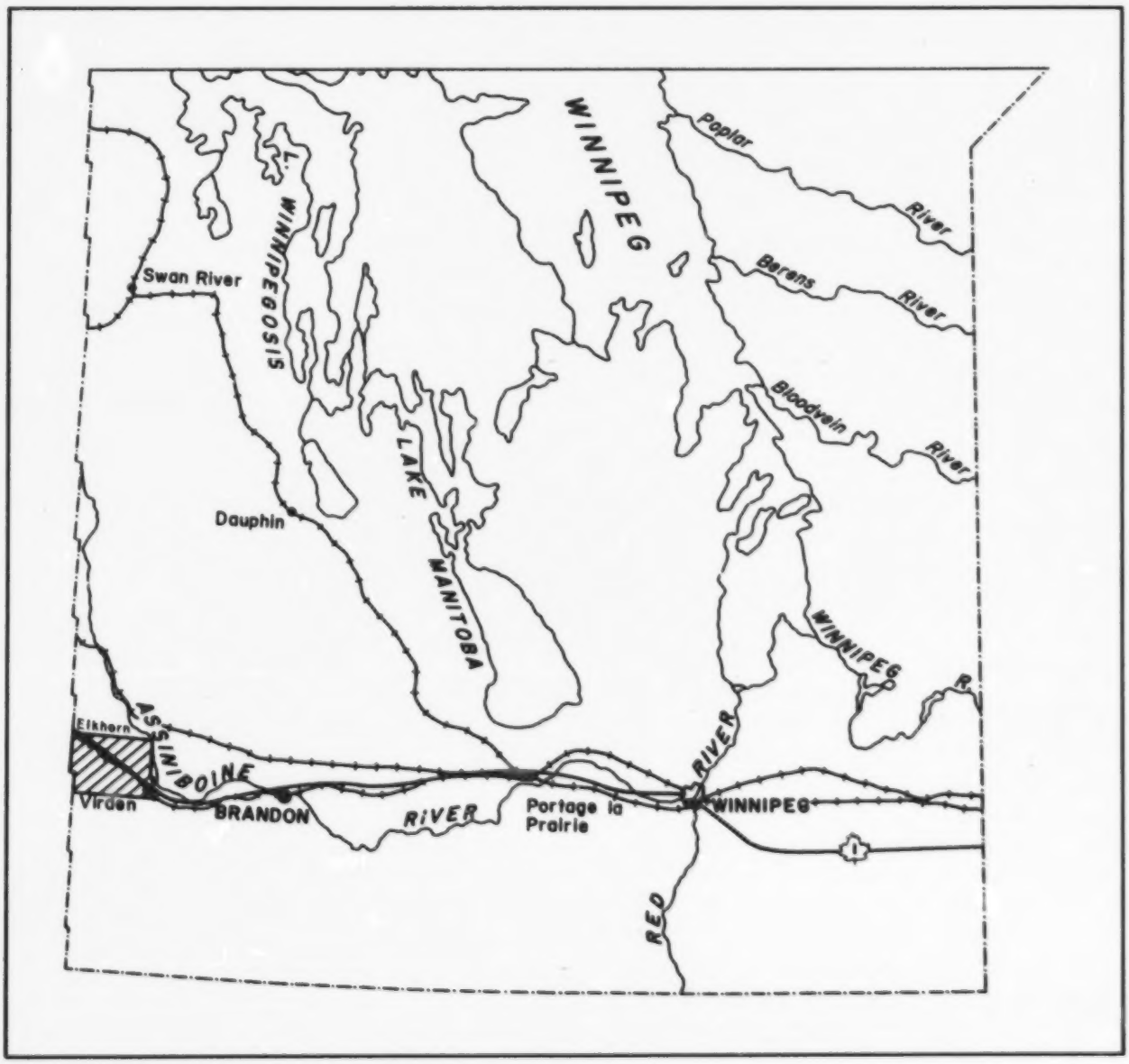

FIGURE 1. Location of the Rural Municipality of Wallace.

INTRODUCTION

In the summer of 1984, a study was undertaken to evaluate the sand and gravel resources in the R.M. of Wallace.

The objectives of this study were to map the distribution of sand and gravel deposits at a scale of 1:50 000 and to determine the quantity and quality of reserves.

LOCATION AND ACCESS

The R.M. of Wallace comprises 1106 km^2 in southwestern Manitoba and encompasses Ranges 26 to 29 WPM and Townships 10 to 12. The major townsites in the area are Virden and Elkhorn located on the Trans-Canada Highway which runs diagonally through the municipality (Fig. 1). The presence of several other paved highways and gravelled section roads allow access to most deposits except in the extreme northeast and northwest.

PREVIOUS WORK

The Quaternary geology of southwestern Manitoba and the Cretaceous bedrock outcrops were mapped by Elson (1961) at a scale 1:126 720. This map includes the southern two thirds of the study area. The surficial geology of the Riding Mountain area was mapped by Klassen (1979) at a scale of 1:250 000; this map covers the northern one third of the study area. A Quaternary geology map of southwestern Manitoba was compiled by the Aggregate Resource Section, Mineral Resources Division (1980) at a scale of 1:250 000. It includes descriptions of each surficial unit and a discussion of glacial and late glacial events.

Discussions of the regional glacial history are found in papers by Christiansen (1978) and Clayton and Moran (1982). Papers that are specifically devoted to the glacial history of southwestern Manitoba are by Elson (1958) and Klassen (1972).

R.W. Klassen (1969, 1971, 1975, 1979) has worked extensively in southwestern Manitoba and has written several papers describing the Quaternary geology, stratigraphy, and geomorphology of the study area. Detailed discussion of the underlying Cretaceous bedrock is found in Wickenden (1945), Bannatyne (1970), and McNeil and Caldwell (1981).

PHYSIOGRAPHY

The R.M. of Wallace is on the second prairie level of the Canadian Plains west of the Manitoba escarpment. It lies within two physiographic divisions of the Saskatchewan Plains; the Assiniboine River plain, for the most part, and the Souris River plain in the southwest (Klassen 1979).

The study area slopes gently to the northeast. The highest elevation is at 554 m above sea level (a.s.l.) along the Saskatchewan border toward the Moose Mountain upland. Elevation decreases eastward, toward the Assiniboine Valley to 392 m a.s.l. Northeast trending till ridges create a gently rolling topography in the municipality.

The study area is predominantly corrugated moraine and till plain. Southeast drainage occurs through several meltwater channels that were incised across the municipality during glacial retreat (Fig. 2). Meltwater deposited outwash along the walls and floors of the channels. Deltaic and lacustrine sands and silts associated with glacial Lake Souris are found in the southeast.

METHODOLOGY

Aerial photographs at a scale of 1:50 000 taken in 1978 and 1:15 840 taken in 1982 and existing surficial geology maps (Elson 1961) and (Klassen 1979) were used to delineate existing and potential gravel deposits. Pit inventory files from the Department of Highways and Transportation were used to help pinpoint existing aggregate sources.

Road cuts, existing gravel pits, backhoe test pits and hand dug holes were examined and samples of all granular deposits were collected. Locations of all sample sites are shown on Map AR85-1 (in pocket).

Thickness of deposits and depletion of reserves were noted during field examination. The area of each deposit was determined using aerial photographs. Reserve estimates were calculated using these three variables.

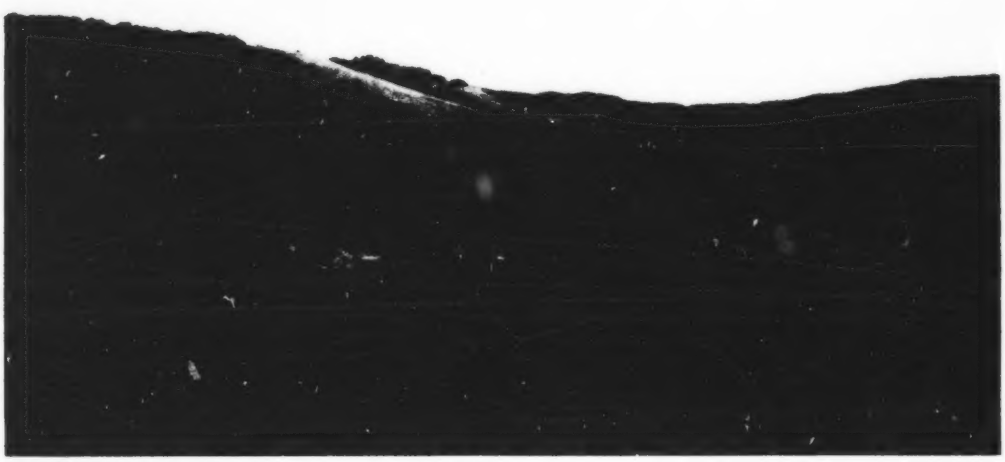

FIGURE 2. Meltwater channel (Gopher Creek) facing west.

A sieve analysis of each sample was performed to determine particle size gradation between 0.074 mm (#200 mesh screen) and 101.6 mm (4" screen). All material greater than 4.76 mm and less than 64 mm constitutes gravel. All material less than 4.76 mm and greater than .06 mm constitutes sand. Particles greater than 15 cm were recorded as crushable material. Quality is defined as the gravel content expressed as a per cent. For example, greater than 60% gravel constitutes high quality, 40-60% gravel constitutes medium quality, and less than 40% gravel constitutes low quality. Pebble counts were carried out for the 5/8"-#4 sieve fraction of each sample to determine lithology. (Appendix I).

All data are stored on computer discs and are available through the Aggregate Resources Section.

ACKNOWLEDGEMENTS

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BEDROCK GEOLOGY

The R.M. of Wallace is underlain by the Upper Cretaceous marine shales of the Riding Mountain Formation. (Manitoba Mineral Resources Division 1979). The generai geology of the municipality is shown on Figure 3. Average drift thickness overlying the bedrock is 40 m (Klassen 1979).

The hard grey siliceous shale of the Odanah Member is the upper unit (Bannatyne 1970). Scattered outcrops of Odanah shale occur along Niso Creek in the north-central portion of the municipality where glacial drift cover is thin. The shale is jointed due to weathering and breaks easily into fragments. Joints are generally iron stained.

The lower unit, the Millwood Member, a soft greenish brown bentonitic shale (Bannatyne 1970), generally underlies the Odanah Member but in the northeast the Odanah is absent and drift overlies the Millwood (Manitoba Mineral Resources Division 1979). No outcrops were observed within the municipality.

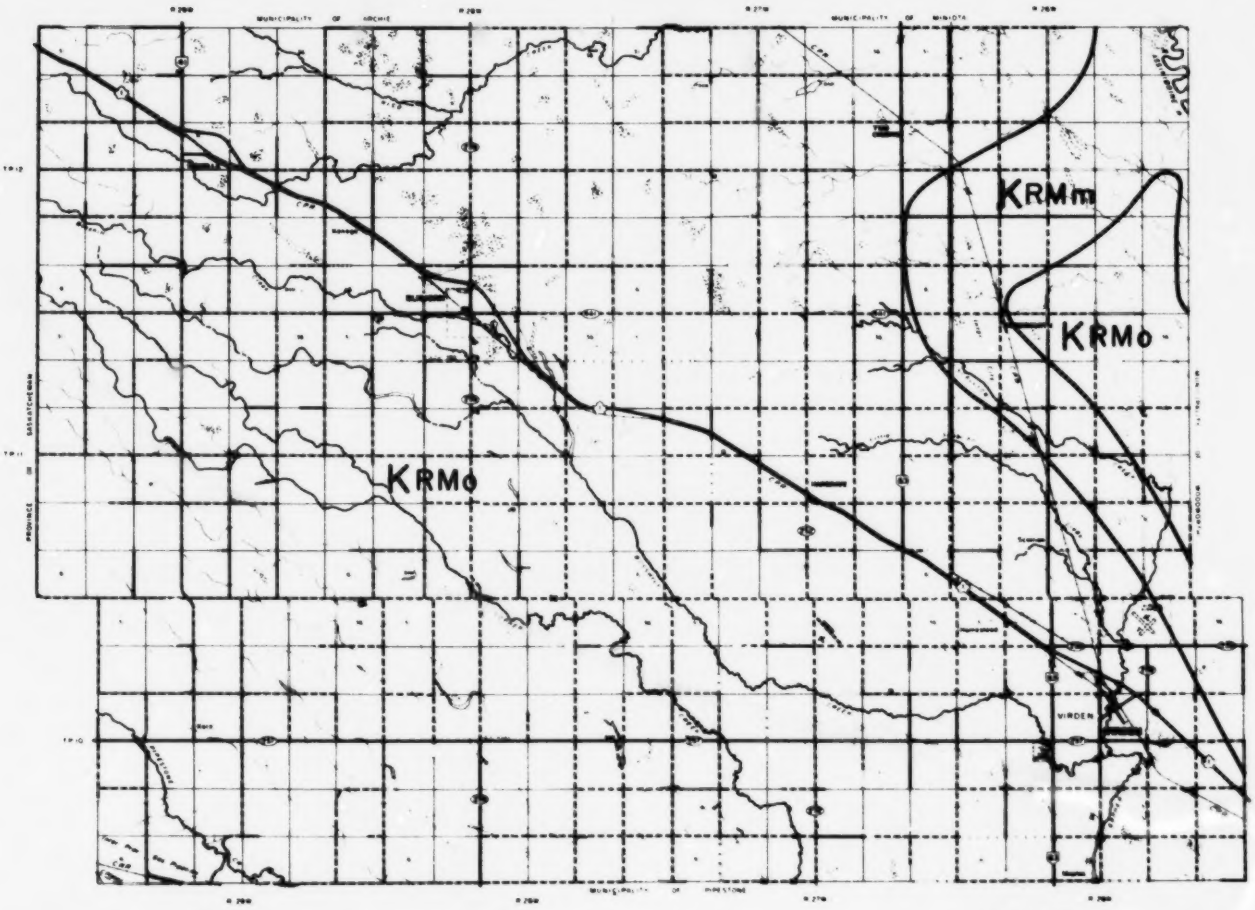
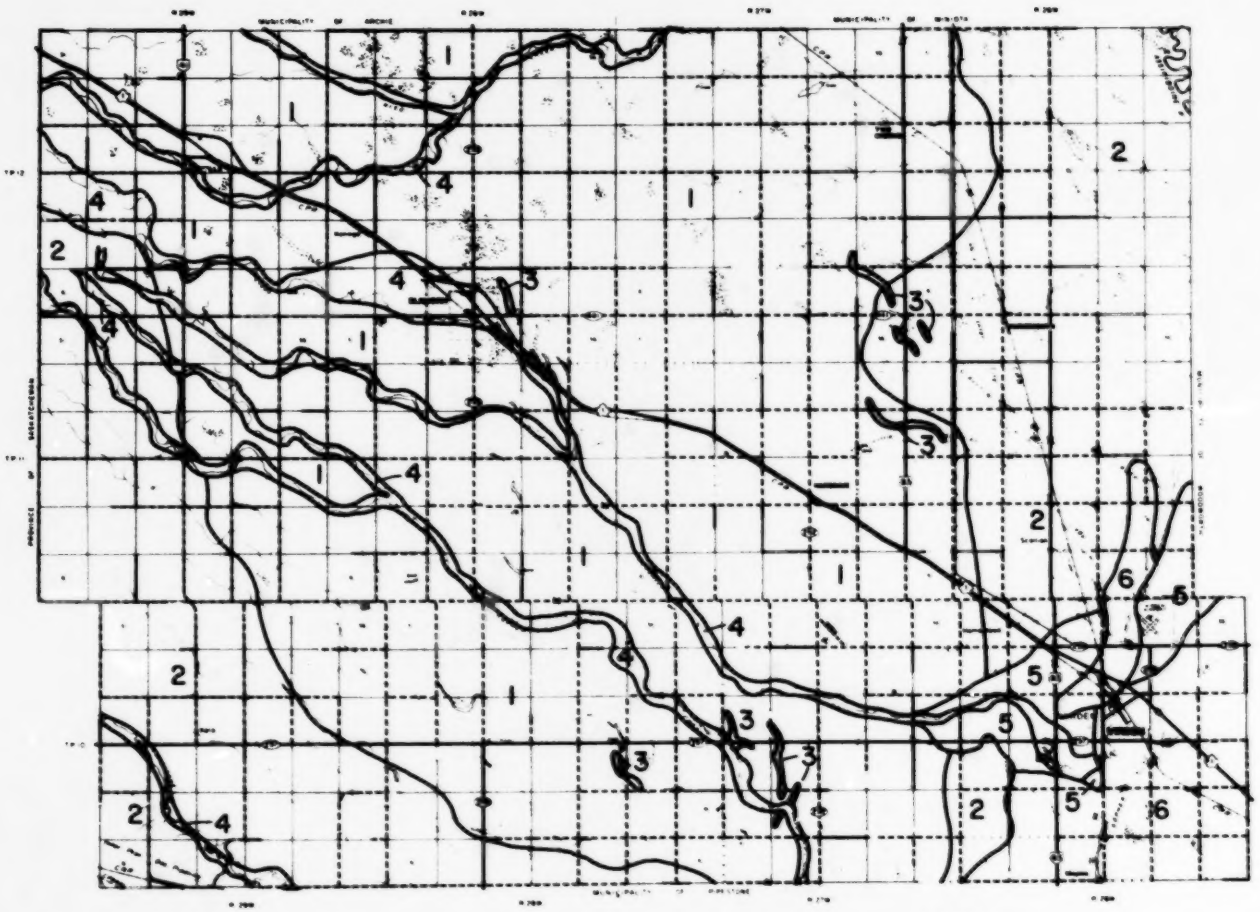


FIGURE 3. Bedrock geology (Manitoba Mineral Resources Division 1979).



LEGEND

0 2 4 6 km

LATE GLACIAL

6 LACUSTRINE SAND & SILT
5 DELTAIC SAND

GLACIAL

4 OUTWASH TILL, SAND & GRAVEL
3 ICE CONTACT SAND, SAND & GRAVEL
2 GROUND MORAINE
1 RIDGED MORAINE

FIGURE 4. Surficial geology (modified after Elson 1961 and Klassen 1979).

QUATERNARY GEOLOGY

The generalized Quaternary geology of the area, modified after Elson (1961) and Klassen (1979), is shown in Figure 4. Characteristics of the units are as follows.

GLACIAL DEPOSITS

Corrugated Moraine

Aligned till ridges, 2-6 m high, occur over most of the study area except in the southern and the eastern portions. Ridges range from 300-1200 m long and are from 120-210 m apart from crest to crest (Klassen 1979). Ridges are easterly oriented, transverse to ice flow direction; furrows or depressions separate the ridges creating a rolling topography. Corrugated moraine is composed primarily of compact clayey Minnedosa Till. It has a characteristic olive colour with distinct oxide stained joints.

The corrugated moraine was deposited during an early Wisconsin glaciation from the north. It was probably formed subglacially near the ice margin (Elson 1961).

Till Plain

This unit is characterized by a flat to gently rolling surface. In the R.M. of Wallace it is found in the southwest and along the eastern boundary. This unit consists of randomly distributed ridges and knolls less than 3 m high.

Lennard Till, a sandy silty till, forms the ground moraine. It is generally a dark greyish brown till and is less oxidized and less compacted than the Minnedosa Till. It was deposited during late Wisconsin glaciation from the northwest. Lennard Till is the most recent till deposited in the area and generally forms the surface unit. However, west of the Assiniboine Valley it is thin and patchy, rarely reaching thicknesses greater than 5 m (Klassen 1979).

Ice-Contact Stratified Drift

There are several generally northwest-trending sinuous ice-contact features in the central portion of the municipality. These features are 4-6 m high and 0.8 to 2.0 km in length. Morphologically, they are indistinguishable from the till ridges but differ in orientation and textural composition. They are northwesterly oriented and range in composition from fine sand to stratified pebble gravel in places flanked or overlain by till. Minor inclusions of till and silt occur within the sand and gravel (Elson 1961). These features were deposited in contact with melting glacier ice during the time of ice stagnation.

Outwash

Outwash was deposited along the southeast trending meltwater channels which are incised in the corrugated moraine and till plain. These channels include Pipestone, Gopher, Bosshill and Niso Creeks. Outwash deposited on channel terraces and channel floors includes isolated pockets of sand and gravel (Fig. 5) and some younger deposits of alluvium.

Along Pipestone Creek, in the southwest corner of the municipality, there is a poorly sorted gravel deposit more than 3 m thick (Fig. 6). A coarse lag concentrate is present at the surface. Pipestone Creek is a small underfit stream occupying a steep sided,

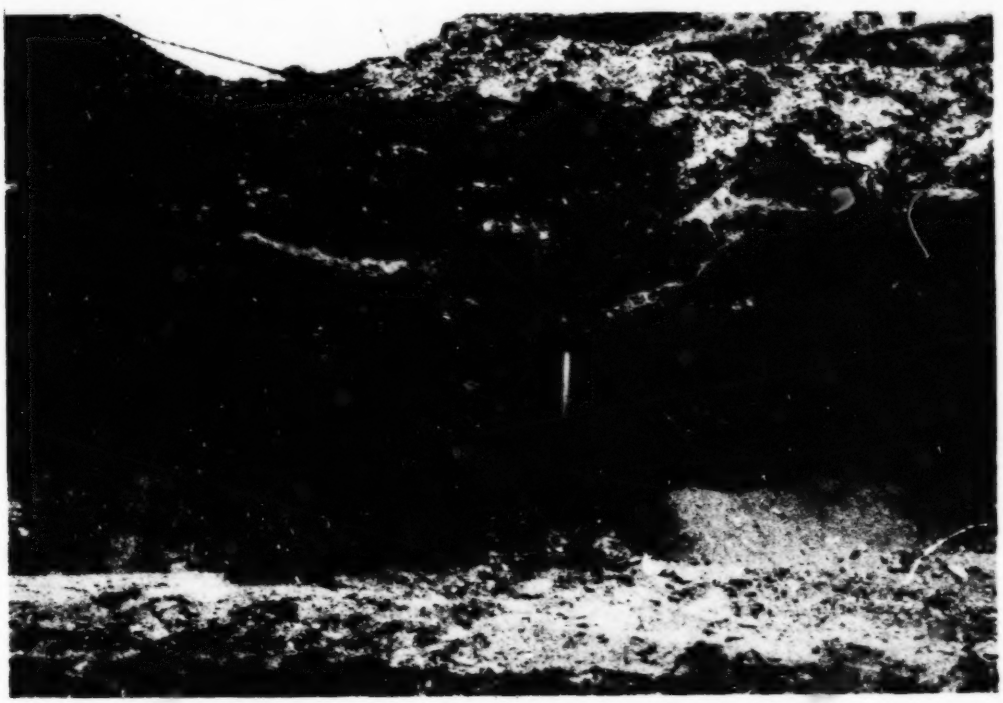


FIGURE 5. Outwash sand and gravel, deposit 11611 facing northwest. Shovel measures 1 m.

FIGURE 6. Coarse, unsorted gravel deposit on Pipestone Creek. Deposit 11601 facing north.

rectangular valley. This valley is as much as 40 m deep and 3.2 km across at its widest point within the municipality. Gopher and Bosshill Creeks occupy smaller valleys generally less than 2 m deep in the northwest and increasing to 30-40 m deep in the southeast. Niso Creek reaches approximately 20-30 m in depth where it enters and exits the municipality in the north. Gopher, Bosshill and Niso Creeks contain gravel deposits generally less than 2 m thick. These isolated pockets of gravel deposited along the meltwater channels are separated by till of both the Lennard and Minnedosa Formations.

Outwash was deposited during glacial retreat as meltwater flowed along the ice margin toward the Lake Souris Basin.

LATE GLACIAL DEPOSITS

Deltaic Sand

Fine sediments were eroded and transported along meltwater channels and deposited as deltaic material near Virden. The sediments are composed of fine- to medium- grained deltaic sands ranging from 1.5 - 2.5 m in depth and are associated with glacial Lake Souris. Clay generally underlies the sand.

Lacustrine Sediments

Fine sand and silt was deposited east of Virden in the glacial Lake Souris Basin. These sediments are massive and cover an area of approximately 60 km^2.

GLACIAL HISTORY

During an Early Wisconsin glaciation from the north the compact clayey Minnedosa Till was deposited in the form of corrugated moraine that is so evident in this area. The most recent glaciation in this area was of Late Wisconsin age, approximately 12 000 years B.P. (Clayton and Moran 1982), when southeasterly moving ice deposited sandy lodgement till, the Lennard Till, as a thin veneer or in patches.

As ice withdrew to the northwest, approximately 11 500 years B.P. (Clayton and Moran 1982), it split into the Assiniboine and the Weyburn Lobes. At this time, glacial Lake Souris and, later, glacial Lake Hind were formed east of Virden. Lacustrine sands and silts were deposited in these glacial lakes before they drained eastward through the Pembina Trench. Ice withdrawal continued into Saskatchewan. The Pipestone Spillway was formed along the southwest margin of the northwest retreating Assiniboine Lobe. Successive drainage occurred through Gopher, Bosshill and Niso Creeks. These creeks mark consecutive ice margins as deglaciation continued. Outwash deposited along these creeks includes silt, sand, and gravel.

During times of ice stagnation, deposits of ice- contact stratified drift were deposited in the central portion of the municipality. Fine sediment was eroded and transported southeast along meltwater channels toward glacial Lake Souris and deposited as deltaic material near Virden. The R.M. of Wallace was totally ice free approximately 11 000 years B.P. (Clayton and Moran 1982).

AGGREGATE RESOURCES

The sand and gravel resources in the R.M. of Wallace are found primarily in outwash deposits and, to a minor extent, in ice-contact deposits. The distribution of sand and gravel deposits is shown on Map AR85-1 (in pocket).

Total reserves are estimated at 1 484 365 m^3 with 850 250 m^3 defined as medium quality. A summary of the quantity and quality of reserves is found in Appendix I and grain size data for each sample are found in Appendix II.

OUTWASH DEPOSITS

Outwash gravel occurs as scattered isolated pockets along meltwater channels. The outwash sand and gravel comprises approximately 80% of all economic granular deposits in the Rural Municipality of Wallace.

There were eight active pits within the outwash gravels in deposits 11602, 11609, 11626, 11629, 11631 and 11632. Others appear to have been recently excavated but were not active during the summer of 1984. The remainder of the deposits are depleted or near depletion.

Deposit 11602 contains 2 m of coarse sandy cobble gravel with an approximately 20% shale content, 42% carbonate content and 38% Precambrian content. There is a lack of gradation in grain size. This deposit was being mined by the Department of Highways for traffic gravel.

Deposit 11609 is depleted to the west and north but contains an active pit in the south. There is approximately 1.5 m of coarse sandy pebble gravel with a cobble lag at the surface. The lithologic composition is 57% carbonate clasts and 43% Precambrian clasts. The water table is encountered at 1.5 m. Fine- to medium-grained sand is present below the water table. The gravel in the south end of this deposit was being excavated for use as traffic gravel.

Deposit 11626 contains approximately 1.5 - 2.0 m of coarse sandy pebble gravel with a cobble lag overlying the gravel. A discontinuous layer of till up to 1 m thick overlies the cobble layer.

This deposit was being excavated by the Department of Highways for traffic gravel. The lithologic composition is 57% carbonates and 43% Precambrians with a very small amount of shale.

Deposit 11629 has a textural composition ranging from medium- to coarse-grained sand with pebbles in the south to cobbly pebble gravel in the north (Fig. 7). The coarse material contains varying amounts of shale, clay lumps and weathered Precambrians clasts. The lithologic composition is approximately 52% carbonate clasts and 48% Precambrian clasts. This deposit has been used by the Department of Highways in the past for traffic gravel. During the summer of 1984 it was being excavated by the owner for local use.

Deposit 11631 contains 2.0 - 2.5 m of sandy fine pebble gravel with a 59% carbonate content and 41% Precambrian content. The west half of the deposit was opened in 1984 by the Department of Highways. It was being excavated for use as traffic gravel. The east half of the deposit contains a pit that has been extensively mined but is now revegetated.

Deposit 11632 is a large deposit west of Virden. It has been extensively excavated and although parts of it are depleted, reserves still remain and are being mined from three active pits within the deposit. One pit at SE20 - 10 - 26W, contains 2 m of sandy coarse

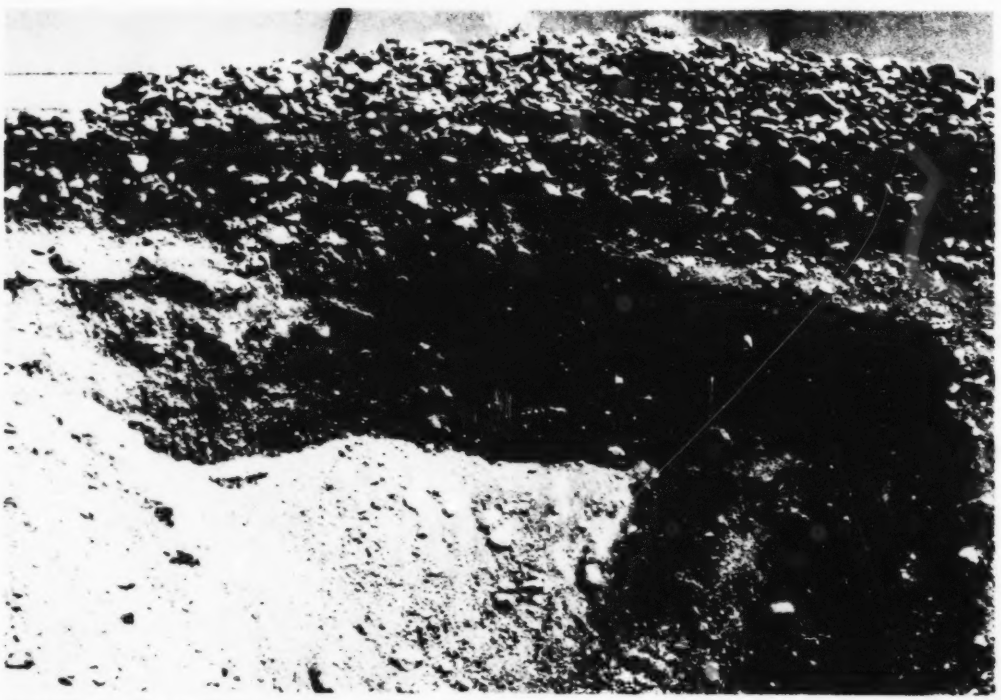


FIGURE 7. Deposit 11629 facing east, cobbly pebbly gravel. Shovel measures 1 m.

TABLE 1

ESTIMATED DEMAND FOR SAND AND GRAVEL

(cubic metres)

	1 Year	5 Years	10 Years
Dept. of Highways	41 000	205 000	410 000
R.M. of Wallace	3 000	15 000	30 000
Other	1 000	5 000	10 000
Total	45 000	225 000	450 000

TABLE 2

ESTIMATED RESERVES

(cubic metres)

Quality	Quantity
High	0
Medium	850 250
Low	634 115
TOTAL	1 484 365

pebble gravel at its south end. There is a fining of material to the north. This pit is largely depleted but the Department of Highways was extracting material for use as bituminous aggregate. Extraction from pits in both NW19-10-26W and NW20-10-26W was also being carried out by the Department of Highways for A base, C base, pit run and traffic gravel. The textural composition of the material is sandy coarse pebble gravel and ranges from 1.5 - 3.0 m in thickness.

All samples taken from deposit 11632 contains small amounts of shale and chert. The lithologic composition is generally 55% carbonate clasts and 45% Precambrian clasts.

ICE-CONTACT DEPOSITS

The ice-contact deposits are sinuous ridges located in the central portion of the municipality. They are composed of granular material ranging from fine sand to pebble gravel.

Ten ice-contact deposits are located in the municipality. Three deposits, 11617, 11623 and 11624, contained stratified pebble gravel overlain or flanked by till. Deposits 11627 and 11636 contained fine- to medium- grained sand with occassional pebbles. The remaining deposits are composed of pebble free sand.

The carbonate content of the gravel in the ice-contact deposits is slightly higher than that of the outwash deposits. In the 5/8" - #4 sieve fraction, there are approximately 60% carbonate clasts and 40% Precambrian clasts. Varying amounts of shale are present. None of the ice-contact deposits are being excavated for gravel.

It would be uneconomical to extract gravel from long narrow ridges less than 6 m wide and up to 2 km in length when more localized gravel sources are available. Extraction from these deposits would occur only in a gravel scarcity.

The material examined was exposed in road cuts or in backhoe test pits in the road allowance. The entire length of these deposits was not tested due to inaccessibility and cultivation of the surface. It would be misleading to imply that the composition of the entire length of each ridge was consistent with the faces examined. Therefore, conclusions about the quality and quantity of these deposits are based only on material tested.

DEMAND FOR SAND AND GRAVEL

Estimated annual consumption for the next five years, based on figures from the Department of Highways, Materials and Research Branch, and the R.M. of Wallace municipal office is 44 000 m^3 annually (Table 1). Total reserves for the R.M. of Wallace are estimated at 1 484 365 m^3. Of this total, 850 250 m^3 are considered medium quality (Table 2). Gravel is used for construction related purposes in the two major townsites of Virden and Elkhorn. The major end use of the gravel, however, is for road construction and road maintenance, both provincially and municipally. Sufficient medium quality reserves are available to satisfy aggregate requirements in the R.M. of Wallace for the next 18 years.

CONCLUSION

Sand and gravel resources are found primarily in outwash deposits and, to a minor extent, in ice-contact deposits. There were eight active pits in the R.M. of Wallace during the summer of 1984 but many of the deposits have been mined to depletion.

Total reserves are estimated at 1 484 365 m^3 with 850 250 m^3 of medium quality material available. There are adequate reserves within the municipality to meet local needs for the next 18 years.

Importing of gravel from neighbouring municipalities occurs occasionally at the present time but as depletion of medium quality material continues it will become a more common practice in the future.

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APPENDIX I
AGGREGATE RESOURCE DATA FOR THE R.M. OF WALLACE

Deposit No.	Genetic Type	Estimated Reserves (m^3)	Production Potential	Sample Nos.	% Retained on #4 sieve (4.76 mm)	% Carbonate of the 4.76 - 16.0 mm fraction	Comments
11601	2b	56 800	Medium	PB150	46.61	58	— coarse lag at surface contained shale, weathered Precambrians, carbonate incrustation.
				151	26.54	58	
				152	51.47	56	
				153	50.01	54	
				154	54.41	59	
				BB221	42.55	62	
				222	53.71	55	
11602	2c	34 800	Medium	PB201	53.21	42	— recent excavation, approx. 20% shale content.
11603	2c	330	Low	PB218	20.36	49	— depleted.
11604	2c	2 130	Medium	PB172	57.70	55	— depleted and revegetated.
11605	2c	13 500	Medium	PB185	47.29	58	— recent excavation partially depleted.
11606	2a	20 250	Low	PB202	39.51	41	— primarily sand, test pit.
11607	2c	255	Medium	PB203	56.77	59	— depleted and revegetated.
11608	2c	33 600	Medium	PB167	46.11	52	— no access, partially depleted.
11609	2c	26 850	Medium	PB168	52.00	57	— west end depleted, southeast corner active
				BB219	36.03	57	
				PB220	41.35	49	
11610	2c	10 000	Medium	PB169	55.02	54	— shallow
11611	2c	32 400	Medium	PB204	46.12	40	— gravelly sand,
11612	2c	42 000	Low	PB205	38.97	25	— test pit, approx. 40% shale
11613	2c	10 400	Medium	PB166	50.27	57	— near depletion
11614	2c	6 000	Medium	PB165	46.72	49	— small pit, near depletion
11615	2c	54 800	Low	PB160	32.43	52	— largely depleted, reserves north of road.
				161	52.36	42	
				162	21.08	52	
				163	25.14	58	
				164	11.61	52	
				BB216	25.16	63	
				217	37.33	54	
11616	2c	53 770	Medium	PB157	42.17	54	— depleted to the south, reserves to the northwest.
				158	46.37	54	
				159	35.07	56	
11617	1b	5 550	Medium	PB155	60.52	59	— near depletion, partially revegetated.
				156	37.16	57	
11618	2c	7 000	Medium	PB171	56.60	54	— partially depleted and revegetated.
11619	2a	11 600	Low	PB170	20.95	52	— test pit — primarily sand
11620	2a/2b	25 000	Medium	PB183	40.50	56	— fine sand to the north partially depleted pit to the south.
11621	2a	37 800	Low	PB210	9.52	33	— primarily sand, approx. 35% shale.

APPENDIX I (cont.)
AGGREGATE RESOURCE DATA FOR THE R.M. OF WALLACE

Deposit No.	Genetic Type	Estimated Reserves (m^3)	Production Potential	Sample Nos.	% Retained on #4 sieve (4.76 mm)	% Carbonate of the 4.76 - 16.0 mm fraction	Comments
11622	2c	94 500	Medium	PB197	33.60	53	— new source
				BB223	50.50	53	
11623	1b	52 200	Medium	PB177	46.08	54	— test hole
11624	1b	82 600	Low	PB178	29.67	41	— road cut, approx. 30% shale
11625	2c	35 000	Medium	PB181	43.31	55	— recent excavation.
11626	2b	64 800	Medium	PB180	52.09	57	— active pit — Dept. of Highways
11627	1a	68 400	Low	PB179	20.68	41	— sandy, approx. 30% shale
11628	2c	13 500	Medium	PB182	56.06	51	— partially depleted & revegetated
11629	2c	30 000	Medium	PB184A	20.77	53	— fines to the south.
				PB184B	43.47	52	
11630	2c	51 000	Medium	PB192	46.30	61	— partially depleted.
11631	2c	64 275	Low	PB193	30.23	56	— east half near depletion west half recently excavated by the Dept. of Highways.
				194	27.27	61	
11632	2c	174 195	Medium	PB186	35.97	54	— large deposit, extensively excavated reserves remain in the southwest and northwest portions of the deposit.
				187	35.83	58	
				188	56.95	56	
				189	52.25	51	
				190	21.94	55	
				191	32.50	52	
				BB211	20.88	57	
				212	60.56	59	
				213	46.05	62	
				214	51.26	54	
11633	2c	5 000	Medium		41.80		— requires testing.
11634	2c	56 700	Low	PB199	31.37	61	— small amount of gravel removed by owner.
11635	2c	62 860	Low	PB200	24.09	55	— north depleted, reserves to the south.
11636	1a	84 000	Low	PB176	13.23	63	— primarily sand.
11637	2c	900	Low	PB173	25.26	34	— approx. 30% shale, deposit near depletion.
11638	2c	30 400	Low	PB175	38.14	51	— PFRA pits.
				BB206	38.42	53	
				207	50.68	56	
11639	2c	5 700	Low	-	-	-	— untested.
11640	2c	500	Low	Dept. of Hwys. Data.	-	-	— near depletion.
11641	2a	1 000	Low	"	19.3	-	— sandy.
11642	2c	5 000	Medium	"	-	-	— fine material
11643	2c	17 000	Medium	"	47.48	-	— shallow deposit
Total		1 484 365					

APPENDIX II
GRAIN SIZE DISTRIBUTION
(PER CENT RETAINED)

SAMPLE NUMBER

Sieve Size	PB150A	PB150B	PB151	PB152	PB153	PB154	BB221	BB222	PB201	PB218	PB172	PB185
4"	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3 1/2"	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3"	6.48	0.00	0.00	0.00	3.40	5.00	0.00	5.96	3.03	0.00	0.00	0.00
2 1/2"	6.48	0.00	0.00	3.39	6.00	5.00	0.00	7.80	9.69	0.00	0.00	2.76
2"	10.22	5.51	1.93	9.90	12.78	7.35	3.37	11.95	17.78	0.00	0.00	6.21
1 1/2"	15.11	7.49	4.20	14.98	19.96	14.54	5.02	17.10	24.33	0.25	4.25	13.13
1"	22.39	13.68	9.45	17.17	24.77	23.06	7.78	20.76	32.39	0.64	12.35	21.12
3/4"	28.09	19.33	12.59	19.71	30.22	24.10	11.62	25.94	37.11	1.11	21.01	25.66
5/8"	31.49	22.86	13.06	23.49	32.04	27.74	12.78	29.31	38.71	2.08	29.49	27.97
1/2"	34.35	25.55	15.05	25.95	36.61	32.77	15.02	33.83	41.39	2.94	34.85	30.19
3/8"	38.77	30.20	17.28	31.42	41.01	38.32	22.08	38.80	43.79	5.32	43.25	34.96
1/4"	44.20	38.65	21.39	41.51	46.05	47.64	34.48	48.97	48.86	12.50	52.47	42.68
#4	47.56	45.65	26.54	51.47	50.01	54.41	42.55	53.71	53.21	20.36	57.70	47.29
#8	56.10	67.10	43.56	78.53	62.48	72.34	63.88	71.33	64.36	51.47	67.49	58.15
#10	58.25	72.04	48.88	83.50	66.46	76.11	68.34	75.26	67.56	59.73	69.51	60.77
#16	65.35	82.36	63.37	92.11	79.41	84.39	76.64	83.30	77.38	75.60	75.65	70.26
#30	75.09	90.54	80.03	96.43	89.68	90.37	85.00	90.46	90.41	86.53	84.38	85.15
#40	79.85	92.87	85.92	97.48	91.40	91.78	88.58	92.44	93.83	89.80	88.81	91.43
#50	83.45	94.44	90.36	98.34	92.74	92.85	91.18	93.91	95.65	92.94	92.43	95.25
#80	84.90	95.26	92.51	98.73	93.53	93.14	93.04	95.00	96.62	95.41	94.80	96.90
#100	86.46	95.59	93.07	99.14	94.33	94.09	93.44	95.29	96.92	95.80	95.34	97.16
#200	88.52	96.09	94.06	99.59	95.65	95.28	94.57	96.17	97.70	96.84	96.52	97.93
< 200	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
% cobbles*	6.48	0.00	0.00	3.39	6.00	5.00	0.00	7.80	9.69	0.00	0.00	2.76
% pebbles	41.09	45.65	26.54	48.08	44.01	49.42	42.55	45.91	43.52	20.36	57.70	44.53
% granules	10.69	26.39	22.34	32.03	16.44	21.70	25.79	21.55	14.36	39.37	11.81	13.48
% sand	30.27	24.04	45.19	16.09	29.20	19.16	26.24	20.92	30.14	37.11	27.02	37.15
% silt/clay	11.48	3.91	5.94	0.41	4.35	4.72	5.43	3.83	2.30	3.16	3.48	2.07

GRAIN SIZE DISTRIBUTION
(PER CENT RETAINED)

SAMPLE NUMBER

Sieve Size	PB202	PB203	PB167	PB168	PB219	PB220	PB169	PB204	PB205	PB166	PB165	PB160
4"	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3 1/2"	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3"	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.07	0.00	0.00	0.00	0.00
2 1/2"	4.24	4.06	0.00	2.26	0.00	0.00	6.20	5.72	0.00	0.00	0.00	0.00
2"	5.25	12.09	3.24	13.25	0.56	2.03	7.29	5.72	7.53	2.80	6.59	1.79
1 1/2"	7.82	16.22	5.70	16.58	4.43	5.48	12.79	6.98	11.16	5.29	9.52	4.87
1"	12.36	22.95	10.20	24.57	10.05	10.03	17.38	9.46	14.57	9.07	12.95	8.24
3/4"	16.91	29.23	13.34	29.90	15.24	14.63	21.67	12.57	17.74	14.48	18.65	11.87
5/8"	20.29	32.31	17.05	33.34	15.96	19.41	26.44	14.42	20.27	16.77	21.06	15.02
1/2"	23.65	36.92	20.75	36.38	18.07	22.51	30.90	19.62	24.42	22.62	26.03	17.95
3/8"	29.55	42.65	28.70	41.73	23.17	28.42	38.04	28.71	28.05	33.13	31.21	22.65
1/4"	35.48	50.95	38.51	48.04	31.06	36.64	47.72	38.87	34.26	43.71	39.29	27.93
#4	39.51	56.77	46.11	52.00	36.03	41.35	55.02	46.12	38.97	50.27	46.72	32.43
#8	48.16	67.58	63.06	58.76	53.13	55.01	67.69	60.18	49.98	62.04	64.10	41.96
#10	50.54	69.83	67.00	59.69	56.64	58.73	70.05	63.38	52.72	64.66	68.07	44.39
#16	60.86	77.05	77.79	61.55	62.84	69.20	77.39	73.04	61.49	71.57	80.17	51.76
#30	84.77	88.18	88.89	67.18	73.63	87.59	88.18	85.45	73.51	80.18	90.48	70.90
#40	92.57	91.23	92.35	78.77	83.69	92.78	91.91	89.71	81.14	84.17	92.93	80.67
#50	95.68	92.90	94.48	90.30	90.75	95.08	94.35	95.25	92.05	89.02	94.89	87.82
#80	96.82	93.46	95.69	93.26	94.24	96.17	95.68	97.19	94.22	91.82	96.14	92.20
#100	97.07	94.59	96.03	97.05	94.81	96.44	96.08	97.47	95.82	92.94	96.45	93.91
#200	97.84	95.88	96.95	98.14	96.06	97.25	96.89	98.29	97.65	94.18	97.10	95.56
<200	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
% cobbles	4.24	4.06	0.00	2.26	0.00	0.00	6.20	5.72	0.00	0.00	0.00	0.00
% pebbles	35.27	52.71	46.11	49.74	36.03	41.35	48.82	40.40	38.97	50.27	46.72	32.43
% granules	11.03	13.06	20.90	7.69	20.61	17.38	15.03	17.26	13.75	14.39	21.35	11.96
% sand	47.30	26.05	29.95	38.45	39.42	38.42	26.84	34.91	44.92	29.52	29.03	51.17
% silt/clay	2.16	4.12	3.05	1.86	3.94	2.85	3.11	1.71	2.35	5.82	2.90	4.44

GRAIN SIZE DISTRIBUTION
(PER CENT RETAINED)

SAMPLE NUMBER

Sieve Size	PB161	PB162	PB163	PB164	PB216	PB217	PB157	PB158	PB159	PB155	PB156	PB171
4"	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3 1/2"	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3"	4.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.08	0.00	0.00
2 1/2"	4.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.04	0.00	0.00
2"	4.75	0.00	0.38	0.00	0.00	0.00	3.30	0.00	1.46	14.37	0.00	1.22
1 1/2"	10.46	0.00	1.07	0.00	0.00	4.25	7.34	1.46	3.54	20.95	3.18	2.83
1"	18.87	1.18	2.14	0.71	1.47	9.56	12.78	6.62	9.69	30.76	5.63	6.99
3/4"	24.60	2.60	4.04	1.55	2.79	14.39	19.47	15.38	14.64	37.77	10.07	10.98
5/8"	29.79	3.92	5.32	2.30	4.58	14.39	23.19	22.39	17.11	41.97	15.13	18.19
1/2"	32.94	7.21	8.46	3.44	6.74	18.42	25.49	25.83	22.23	43.16	18.60	23.66
3/8"	38.83	10.66	12.63	5.23	11.81	22.68	31.03	32.56	25.91	47.84	23.52	36.25
1/4"	46.68	15.91	18.99	8.53	19.05	30.85	37.43	40.13	30.97	54.25	31.41	48.17
#4	52.36	21.08	25.14	11.61	25.16	37.33	42.17	46.37	35.07	60.52	37.16	56.60
#8	67.12	35.41	42.00	21.36	48.31	55.55	52.64	60.01	44.19	73.51	52.39	70.27
#10	70.73	39.07	45.74	25.10	54.15	60.51	55.27	63.37	46.92	76.13	55.69	72.74
#16	80.39	53.24	56.48	40.57	68.48	71.71	63.54	71.35	55.40	80.52	65.34	79.49
#30	86.45	83.32	73.45	72.19	85.21	86.44	75.69	80.90	67.88	84.62	78.76	88.31
#40	87.90	93.72	83.33	84.39	91.00	91.63	84.38	86.34	73.96	87.66	85.16	91.80
#50	89.63	97.49	89.89	91.68	95.06	94.52	92.65	91.78	80.06	91.04	90.75	94.40
#80	90.78	98.27	92.90	92.70	96.96	95.93	95.68	94.39	82.72	93.27	92.93	95.69
#100	91.77	98.87	93.88	95.37	97.20	96.21	96.56	95.21	86.40	94.61	94.71	96.33
#200	93.18	99.30	95.68	96.49	97.77	97.07	97.17	96.24	91.06	96.12	96.01	97.31
<200	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
% cobbles	4.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.04	0.00	0.00
% pebbles	47.61	21.08	25.14	11.61	25.16	37.33	42.17	46.37	35.07	54.48	37.16	56.60
% granules	18.38	17.99	20.59	13.49	28.99	23.18	13.09	17.00	11.85	15.61	18.52	16.14
% sand	22.45	60.23	49.94	71.39	43.61	36.55	41.90	32.86	44.14	19.99	40.33	24.57
% silt/clay	6.82	0.70	4.32	3.51	2.23	2.93	2.83	3.76	8.94	3.88	3.99	2.69

GRAIN SIZE DISTRIBUTION
(PER CENT RETAINED)

SAMPLE NUMBER

Sieve Size	PB170	PB183	PB210	PB197	BB223	PB177	PB178	PB181	PB180	PB179	PB182	PB184A
4"	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3 1/2"	0.00	0.00	0.00	0.00	8.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3"	0.00	0.00	0.00	0.00	8.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2 1/2"	0.00	0.00	0.00	0.00	8.42	0.00	0.00	0.00	1.91	0.00	0.00	0.00
2"	0.00	2.56	0.00	5.55	11.44	0.72	0.00	6.80	4.98	0.00	3.54	0.00
1 1/2"	0.00	7.92	0.62	7.39	14.47	2.53	0.00	13.20	7.15	2.22	7.68	3.94
1"	0.43	11.87	1.04	8.66	18.43	7.48	0.80	16.87	12.88	3.64	11.41	5.59
3/4"	1.26	18.18	1.73	10.19	20.79	13.10	2.75	21.02	16.96	6.42	17.29	7.31
5/8"	2.92	23.29	1.73	10.64	23.82	16.68	5.38	25.61	21.02	9.11	24.88	11.16
1/2"	4.53	26.79	2.12	12.83	25.28	24.44	8.96	30.09	25.11	11.38	29.48	12.09
3/8"	9.21	30.52	4.16	14.93	29.24	31.28	14.11	34.14	34.18	13.26	38.75	14.01
1/4"	16.20	36.25	6.98	23.01	39.70	39.82	22.91	39.39	44.09	17.34	48.89	17.34
#4	20.95	40.50	9.52	33.60	50.50	46.08	29.67	43.31	52.09	20.68	56.06	20.77
#8	32.10	52.05	21.75	59.61	73.38	60.63	45.13	53.69	67.72	27.88	69.50	31.81
#10	34.41	55.02	26.58	64.79	77.69	63.36	48.99	56.95	70.62	29.59	72.69	34.98
#16	42.05	65.02	42.70	75.57	86.09	70.65	60.91	68.54	79.42	35.68	82.22	46.84
#30	60.33	78.53	70.51	85.08	91 33	78.50	77.49	82.62	87.69	46.47	92.06	73.14
#40	74.75	84.89	79.91	88.86	92.86	82.59	84.85	88.62	90.84	53.70	93.86	85.38
#50	86.17	91.60	87.03	92.09	94.06	87.45	89.93	93.08	93.52	61.79	95.05	92.93
#80	91.42	95.69	92.41	93.19	94.97	91.45	92.52	94.77	95.04	71.76	95.95	96.67
#100	94.71	96.38	93.49	94.82	95.19	92.55	93.18	95.93	95.58	74.91	96.15	97.14
#200	96.70	97.38	95.71	96.11	96.10	94.54	94.11	96.97	96.61	85.22	96.85	98.01
<200	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
% cobbles	0.00	0.00	0.00	0.00	8.42	0.00	0.00	0.00	1.91	0.00	0.00	0.00
% pebbles	20.95	40.50	9.52	33.60	42.08	46.08	29.67	43.31	50.18	20.68	56.06	20.77
% granules	13.43	14.52	17.06	31.19	27.19	17.28	19.32	13.64	18.53	8.92	16.63	14.21
% sand	62.29	42.36	69.14	31.32	18.41	31.18	45.13	40.02	25.99	55.63	24.16	63.03
% silt/clay	3.30	2.62	4.29	3.89	3.90	5.46	5.89	3.03	3.39	14.78	3.15	1.99

GRAIN SIZE DISTRIBUTION
(PER CENT RETAINED)

SAMPLE NUMBER

Sieve Size	PB184B	BB209	PB192	PB193	PB194	PB215	PB186	PB187	PB188	PB189	PB190	PB191
4"	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3 1/2"	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3"	0.00	0.00	0.00	0.00	0.00	3.15	0.00	0.00	0.00	0.00	0.00	0.00
2 1/2"	2.80	0.00	6.95	0.00	0.00	5.60	0.00	0.00	0.00	0.00	0.00	5.44
2"	8.61	0.00	7.97	1.00	0.00	7.74	0.00	3.59	2.34	0.00	0.00	6.93
1 1/2"	9.83	1.31	11.37	1.99	0.00	10.44	0.94	5.99	9.66	6.26	0.00	8.68
1"	14.87	5.60	14.80	4.83	1.25	16.04	6.55	12.92	22.67	14.87	1.64	13.15
3/4"	19.48	10.83	17.35	7.67	4.60	22.54	12.37	17.06	30.61	22.36	3.50	15.73
5/8"	23.26	15.48	20.87	9.52	7.19	23.96	13.19	19.27	35.92	26.97	5.23	17.90
1/2"	26.85	16.57	24.40	13.06	8.89	27.96	14.93	21.38	40.28	33.17	7.23	19.01
3/8"	32.93	22.89	29.93	17.65	13.01	33.85	20.61	24.87	46.05	40.81	12.33	23.21
1/4"	38.36	30.17	38.80	24.01	21.13	39.69	28.48	31.07	52.02	47.44	17.67	28.40
#4	43.47	35.31	46.30	30.23	27.27	44.35	35.97	35.83	56.95	52.25	21.94	32.50
#8	59.93	49.10	61.91	44.12	46.26	58.35	55.79	46.80	68.68	66.00	36.82	43.82
#10	64.13	51.90	65.08	47.31	50.94	62.44	60.41	49.74	71.02	69.60	41.49	47.48
#16	77.99	60.60	72.67	57.13	63.49	73.51	73.03	58.29	76.61	78.54	58.62	59.77
#30	89.66	72.85	81.61	74.87	74.68	89.94	84.74	75.59	82.04	84.48	78.70	79.82
#40	93.19	81.19	86.38	83.99	79.91	94.99	88.54	83.79	87.27	89.66	35.01	88.57
#50	95.50	91.22	90.61	90.92	87.47	97.50	91.91	89.98	92.79	94.38	90.79	94.41
#80	96.63	93.92	94.54	95.40	94.52	98.50	94.27	94.10	95.86	96.62	94.30	94.48
#100	96.93	95.25	95.87	96.08	95.77	98.64	96.35	94.88	96.40	96.94	95.81	97.11
#200	97.73	96.91	98.00	97.49	97.48	98.98	97.69	96.34	97.58	97.84	97.64	98.01
<200	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
% cobbles	2.80	0.00	6.95	0.00	0.00	5.60	0.00	0.00	0.00	0.00	0.00	5.44
% pebbles	40.66	35.31	39.35	30.23	27.27	38.75	35.97	35.83	56.95	52.25	21.94	27.05
% granules	20.67	16.59	18.78	17.09	23.67	18.09	24.45	13.91	14.07	17.35	19.55	14.98
% sand	33.60	45.01	32.93	50.18	46.55	36.54	37.28	46.60	26.56	28.24	56.15	50.53
% silt/clay	2.27	3.09	2.00	2.51	2.52	1.02	2.31	3.66	2.42	2.16	2.36	1.99

GRAIN SIZE DISTRIBUTION
(PER CENT RETAINED)

SAMPLE NUMBER

Sieve Size	PB211	BB212	BB213	PB214	PB199	PB200	BB208	PB176	PB173	PB175	BB206	BB207
4"	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3 1/2"	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3"	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2 1/2"	0.00	2.13	1.64	2.53	0.00	0.00	0.00	0.00	1.08	0.00	0.00	1.70
2"	0.00	4.10	4.06	6.99	0.00	0.00	0.00	0.00	4.50	0.00	0.96	4.64
1 1/2"	1.56	13.80	7.12	16.49	0.00	0.00	0.55	1.74	5.52	1.24	3.96	7.98
1"	4.03	22.70	13.55	26.12	0.85	1.88	3.76	3.47	7.94	8.35	10.84	18.82
3/4"	5.61	30.27	18.32	32.63	3.91	5.77	8.37	4.62	10.04	14.59	17.59	27.45
5/8"	8.65	33.37	21.21	35.61	5.28	6.79	14.47	6.11	11.56	18.18	23.57	30.34
1/2"	10.74	40.05	26.86	38.26	10.84	8.39	17.77	6.94	15.01	23.35	26.87	34.74
3/8"	13.95	48.28	33.67	43.11	15.53	13.73	25.76	8.85	19.08	28.40	30.44	40.35
1/4"	17.97	56.36	41.00	48.84	23.66	19.20	35.11	11.21	22.74	34.62	35.28	46.05
#4	20.88	60.56	46.05	51.26	31.37	24.09	40.61	13.23	25.26	38.14	38.42	50.68
#8	33.29	73.45	61.86	59.07	48.90	37.73	53.61	17.61	29.18	46.33	45.70	59.07
#10	37.06	76.28	65.65	61.27	52.71	41.34	56.37	18.83	30.05	47.84	47.19	60.93
#16	49.25	82.66	74.19	67.74	62.89	54.22	63.09	22.64	32.63	52.19	51.72	65.44
#30	70.44	90.02	85.46	80.13	79.25	73.15	75.18	30.30	40.24	63.45	60.66	72.20
#40	81.14	93.03	91.31	86.61	86.76	79.50	83.60	36.47	46.73	83.64	70.69	78.11
#50	89.60	95.28	95.48	91.61	91.51	92.55	91.72	45.39	61.64	93.18	79.15	86.85
#80	95.51	96.72	97.74	95.19	95.34	95.40	94.97	58.86	75.03	97.40	83.84	91.51
#100	96.48	97.02	98.03	95.80	96.22	97.03	97.78	64.39	79.51	97.91	86.98	92.51
#200	98.07	97.78	98.55	97.24	97.50	97.86	98.77	78.90	84.48	98.51	91.98	94.09
<200	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
% cobbles	0.00	2.13	1.64	2.53	0.00	0.00	0.00	0.00	1.08	0.00	0.00	1.70
% pebbles	20.88	58.42	44.41	48.73	31.37	24.09	40.61	13.23	24.18	38.14	38.42	48.98
% granules	16.18	15.72	19.60	10.01	21.35	17.25	15.76	5.59	4.79	9.70	8.77	10.25
% sand	61.01	21.50	32.90	35.97	44.78	56.52	42.40	60.07	54.43	50.66	44.79	33.16
% silt/clay	1.93	2.22	1.45	2.76	2.50	2.14	1.23	21.10	15.52	1.49	8.02	5.91

* cobbles constitute the 4" - 2 1/2" fraction
pebbles constitute the 2 1/2" - #4 sieve fraction
granules constitute the #4 - #10 sieve fraction
sand constitutes the #10 - #200 sieve fraction
silt/clay constitutes the <#200 sieve fraction

101°26'49"

WALLACE RURAL MUNICIPALITY

Twp. 12

CANADIAN PACIFIC

Trans-Canada Highway

11609 2c

PB168

BB219

Kinkella Lake

PB200

11608 2b

PB167

11607 2c

PB203

11610 2c

PB169

11611 2c

PB204

PB205

11612 2c

11639 2c

11641 2c

BH50

PB202

N606 2a

BH49

PB185

11605 2c

MANITOBA

BH48

BH47

BH46

WALLACE RURAL MUNICIPALITY

11640 2c

11613 2c

PB166

11614 2c

PB165

PB164

PB160

PB161

BH43

BB216

BB217

PB162

11615 2c

PB171

11618 2c

PB158

PB159

11616 2c

PB157

11617 1b

BH

PB155

PB156

Transformer Station

Golf Course

Sewage

Cemetery

Dugout

Dam

47

46

45

44

43

42

41

WALLACE RURAL MUNICIPALITY

PB204
11612
2c

11639
2c

BB206
PB175
BB207
BH7
11638
2c

47
46
45
44
43
42
41

11641
2c

11637
2c
PB173

Transformer Station
11617
1b
BH
PB155
Elkhorn
PB156
Golf Course
Sewage
Burns Slough

BH9
BH8
BH10
BH11
PB176
11636
1a
Creek
Swallow

BH6
BH5
BH1
BH3
BH2
BH4
Harmsworth
Oil Wells

Dugout
Dam
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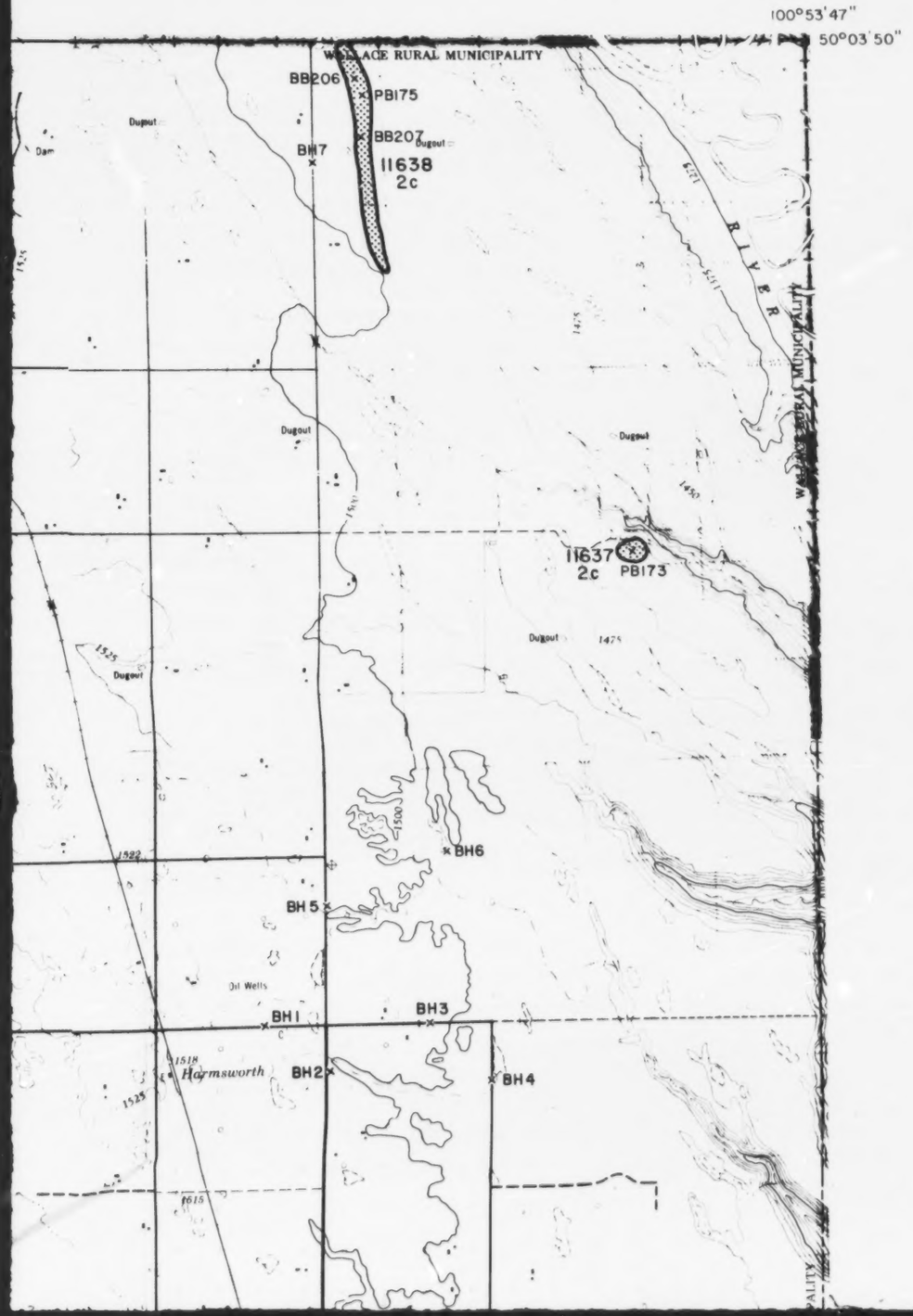


Manitoba
Energy and Mines

AGGREGATE RESOURCES IN THE R.M. OF WALLACE

LEGEND

GLACIAL

2. OUTWASH DEPOSITS - ALONG MELTWATER CHANNELS

a PRIMARILY SAND
b PEBBLE GRAVEL, LAG CONCENTRATE AT SURFACE
c UNSORTED GRAVEL

1. ICE CONTACT DEPOSITS

Twp. 11

Twp. 10

PB171 11618 2c

BH BH PB170 11619 2c BH

PB201 11602 2c

PB218 11603 2c

PB172 BH44 BH45 11604 2c

11642 2c

11620 2a 2c PB183

11629 2c PB184

11628 2c PB182

Gopher

Kpla

CANADIAN

Trans-Canada Highway

CANADIAN PACIFIC

Little Swallow Creek

Hargrave

WALLACE RURAL MUNICIPALITY

Water Injection

BH13 BH14 BH15 BH16 BH17 BH18 BH19 BH20 BH21 BH22 BH23 BH24 BH25

BB208 PB200 BB205

11635 2c

Virden Airfield

Virden

11620 2a 2c PB183

11629 2c PB184

11628 2c PB182

11643 2c

11627 1a PB179 PB178 PB180

11626 2c PB181

11625 2c

11624 1b

11630 2c PB192

11633 2c

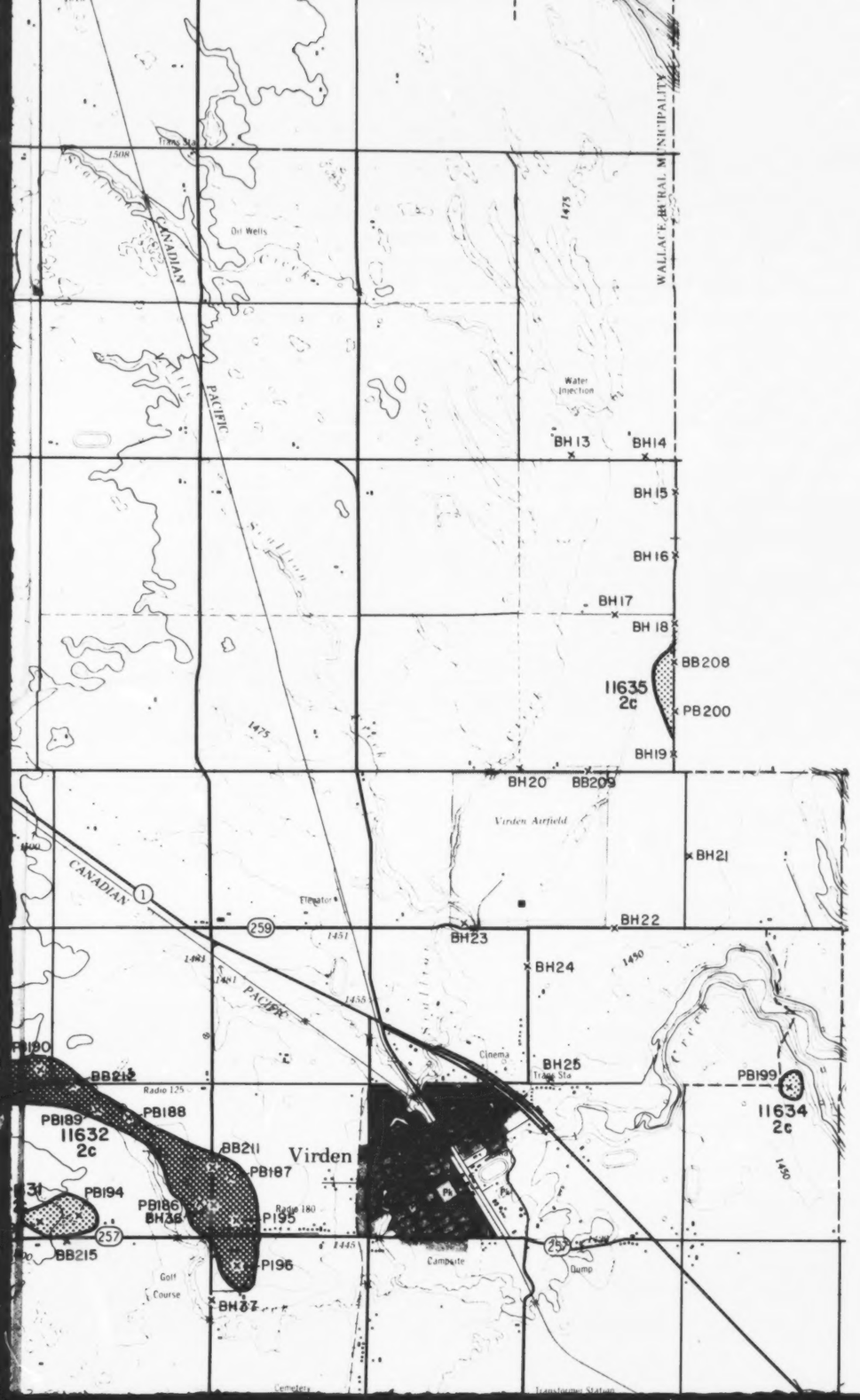
11632 2c PB191 PB190 PB189 PB188 PB214 BB213 BB212

PB187 BB211 PB195 PB196 BB215 PB194 PB186 BH34 BH37

PB199 11634 2c

Campsite

Dump



c UNSORTED GRAVEL

I. ICE CONTACT DEPOSITS

a FINE GRAINED SAND WITH OCCASIONAL PEBBLES

b STRATIFIED PEBBLE GRAVEL

SYMBOLS

⬭	DEPOSIT OUTLINE
11622	DEPOSIT NUMBER
× PB158	SAMPLE SITE, HAND DUG
× P196	DEPLETED PIT, NO SAMPLE TAKEN
× BB206	SAMPLE SITE, BACKHOE PIT
× BH 7	BACKHOE PIT, NO SAMPLE TAKEN

QUALITY

MEDIUM

LOW

INVENTORY BY: P. BERK

⬭ DEPOSIT OUTLINE

Twp.
10

11642
2c

11620
2c
2c
PB183

11629
2c
PB184

11628
2c
PB182

11801
2c
PB153
PB154
PB150
PB151
PB152
BB222
BB221
BH51

49°47'53"
101°25'03"

Rge. 29 W

Rge. 28 W

WALLACE RURAL MUNICIPALITY

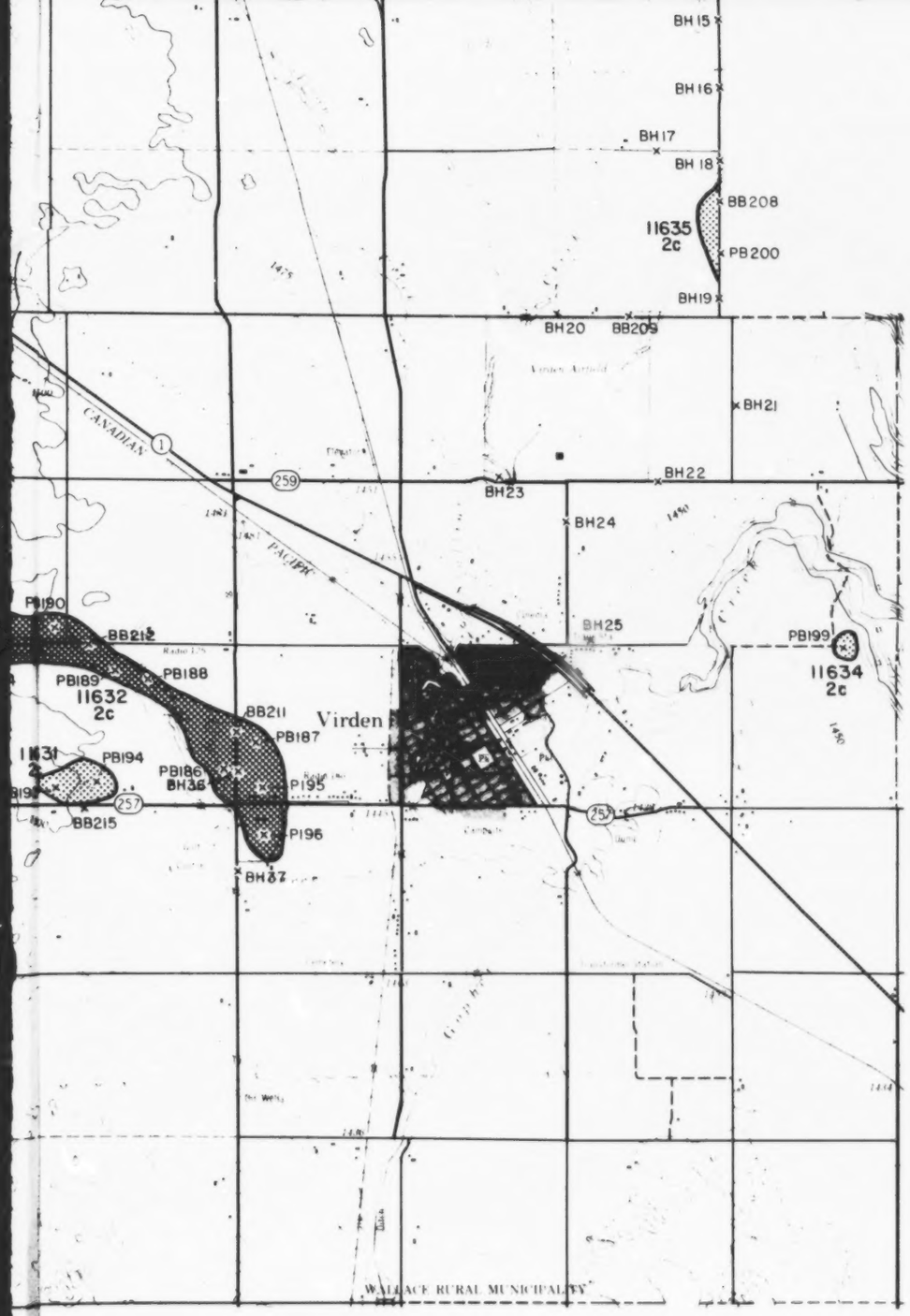
Gopher Creek

Kula

257

1625
1650
1675
1700
1725
1750
1775

BH15
BH16
BH17
BH18
BB208
11635
2c
PB200
BH19
BH20
BB209
BH21
BH22
BH23
BH24
BH25
PB199
11634
2c
PB191
PB190
BB213
BB212
BH31
PB214
PB189
PB188
11632
2c
BB211
PB187
BH32
BH33
PB192
11630
2c
11633
2c
11631
2c
PB194
BH34
PB186
BH36
PB195
BB215
PB196
BH37
11629
2c
PB184
11628
2c
PB182
11643
2c
11627
1a
PB179
PB178
PB180
11626
2c
PB181
11625
2c
11624
1b
PB177
11623
1b
11621
2g
PB210
PB197
BB223
11622
2c
BH52
BH53
CANADIAN PACIFIC
Virden Airfield
Virden
Burns Hill
WALLACE RURAL MUNICIPALITY
NICIPALITY
Rge. 27 W
Rge. 26 W
100°52'18"



	DEPOSIT OUTLINE
11622	DEPOSIT NUMBER
× PB158	SAMPLE SITE, HAND DUG
× P196	DEPLETED PIT, NO SAMPLE TAKEN
× BB206	SAMPLE SITE, BACKHOE PIT
× BH7	BACKHOE PIT, NO SAMPLE TAKEN

QUALITY

MEDIUM

LOW

INVENTORY BY: P. BERK

Scale 1:50 000

KILOMETRES

TO ACCOMPANY AGGREGATE REPORT AR85-1